

TROPICAL RAINFALL MEASURING MISSION

**May 11, 1998 - May 17, 1998
DOY 131-137**

TRMM MISSION OPERATIONS

- TRMM is flying in the -X Forward direction.
- The next Yaw maneuver is scheduled for May 25, 1998 (145).
- The next Delta-V maneuver is scheduled for May 24, 1998 (144) using the ISP thrusters.
- CERES internal and solar calibrations are scheduled for May 20, 1998 (140).
- CERES Alongtrack operations are scheduled for May 23, 1998 (143).
- The Beta angle range for the week of May 18 - May 24 (138-144) is -15.48° to -5.69° .

TRMM SUBSYSTEM OPERATIONS

Attitude Control System

A pair of ISP Delta-V burns was successful on 98-135 at 16:27:56z and 17:13:47z, for a duration of 49 and 27 seconds, respectively. The off-modulation of the -Pitch thruster (#6) was 35% and 31%, respectively (65% and 69% on time). The remaining fuel is 835.5 kg.

TDRS EPVs were loaded to the spacecraft this week. Continuity was temporarily widened on board the spacecraft (from 400 km to 2400 km) prior to uplink to prevent an epv load rejection. Comparisons of the on-board propagation vectors with those ready for delivery reflected a difference of nearly 1000 km in y axis position for TDRS East.

Currently, all TDRS ephemerides are generated by FDF using the Center of Box method of Mission Analysis except TDRS 171 (West Backup), which is still generated using the Impulse method. FDF will be making them all consistent in upcoming deliveries. The Center of Box method is not influenced by individual TDRS stationkeeping maneuvers, since they are all modeled into the product. However, even the Center of Box TDRSs have been failing continuity in certain position axes prior to loading of new vectors. Furthermore, increasing the frequency of delivery to the FOT would not help because FDF maintains vectors out to 6 months in the future, and then breaks up the deliveries into monthly increments; the vectors themselves do not change. The FOT will be monitoring the on-board vectors with the ground vectors to try and understand how and when the divergences occur. Permanently widening the continuity position tolerances is the most likely solution, but appropriate tolerance values still need to be determined.

Flight Data System (FDS)/Command & Data Handling (C&DH)

The Frequency Standard continues to drift in the negative direction. The frequency value remains at x722. The current drift rate is $-2.7 \mu\text{s/hr}$ and the drift value is $0 \mu\text{s}$. The current UTCF is 31535997.883891 seconds following a UTCF Clock adjustment of $-903 \mu\text{s}$ on 98-137.

EDAC multi-bit errors were received on 98-131, 136, and 137.

FOT dwell monitoring revealed that a Flywheel condition occurred on 98-133 and then again on 98-136.

Q-Channel restarts continue on a daily basis, with no impact to operations.

Reaction Control Subsystem (RCS)

The RCS subsystem performed nominally during this period (see ACS for Delta-V information).

Power Subsystem

Currently, Battery-1 and Battery-2 are both reaching 100% state of charge at a C/D setting of 1.03.

Battery-2 Cell-1 is still reaching YH limits 1.50 V to 1.52 V. The power system is being monitored closely by Code 563 and the FOT.

Electrical Subsystem

The Electrical subsystem operated nominally during this period.

Thermal Subsystem

The Thermal subsystem operated nominally during this period.

Deployables Subsystem

The deployables subsystem performed nominally during this period. Testing is being concluded this week on the solar array $\pm 50^\circ$ tracking scenario, including Delta-V and Yaw maneuver performance. Pending final approval this week, the new change would be implemented on Tuesday May 25th (98-146) to take full advantage of trending performance through the entire beta angle cycle from 0° to the worst-case shadowing angle of $+58^\circ$. The FOT will closely monitor array activity, temperatures and power and attitude performance if this change is made.

RF/Communications Subsystem

A thorough review of all subsystem configurations following the Sun Acquisition event from day 115 revealed that transponder two was configured for a command rate of 500 bps. TRMM nominally operates at a 1000 bps command rate during 32/2048 kbps and 1/4 kbps events. As a result, it was decided to make the 500 bps command rate configuration a yellow limit on transponder two as a future reminder that the nominal configuration is not in place. The sun acquisition and safhold recovery procedures are being modified with a configuration reminder comment. Once this discovery was made, it was felt that restoring this configuration to 1000 bps would alleviate the transfer frame errors which had been seemingly randomly occurring during

retransmits and load uplinks (Event #34). Because both receivers are always on and ready to accept commands, certain commands appear to have routed through transponder two, which was configured for 500 bps, and the CI transfer frame errors resulted. Upon making this change, the problem has not been seen again.

SPACECRAFT INSTRUMENTS**CERES**

The CERES Instrument performed nominally while executing its normal sequence of Crosstrack/Biaxial commanding. CERES operated in restricted Biaxial scan mode on 98-131, 134, and 137 and in Contamination Safe mode during the Delta-V maneuver on 98-135. The next day for Alongtrack operations is scheduled for May 23rd (98-143).

Internal Calibrations		Solar Calibrations	
<u>Date</u>	<u>Time</u>	<u>Date</u>	<u>Time</u>
N/A	N/A	N/A	N/A

LIS

LIS performed nominally during this time period.

PR

PR performed nominally during this time period.

PR performed an internal calibration on 98-133 at 03:00:00z, scheduled from a command request. PR internal calibrations are now performed every Wednesday at 03:00z.

TMI

TMI performed nominally during this time period.

VIRS

VIRS performed nominally during this time period. VIRS warning messages continue to occur: #78 and #30. A VIRS Solar Calibration command request was performed on 98-132 at 06:40:30.

GROUND SYSTEM

Release 7.1 is running successfully on all servers in the MOC: real-time and mission planning. No major problems have been experienced at this time. The third server configuration was implemented on Tuesday, May 12 (98-131), and all file-transfer cron jobs are in place.

IP Testing continues to be successful. The FOT has successfully conducted tests consisting of command and load verification as well as high rate telemetry and data dumps (2048 kbps events with recorder playbacks and retransmissions) as well as low rate 1/4 kbps events. The first DSN test with IP will be conducted in early June with Goldstone. Later tests will verify compatibility with the remaining DSN sites as well as the GN AGO site.

EVENT REPORTS

No new Event Reports have been written during this period.

ANOMALIES

No new Anomaly Reports have been written during this period.

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